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the periphery; on the field of regard; the fineness of the form and place of the retina for the production of a distinct image; the power of dispersion by the eye for different colors. Finally he takes up the famous problems of the mechanism which produces accommodation. To produce a distinct image of a given object on a screen the lens must be placed at a certain fixed distance from the object; how is it then that the screen known as our retina is able to receive distinct images at different distances? This problem is one not yet solved in all its complexity. The explanation offered by M. Tscherning is that the alteration required in the crystalline to form an image of objects near by is produced by the tension of the borders of the crystalline, thus increasing the convexity of the center. This is also Young's idea. Helmholtz sought to explain the alteration of the crystalline by an entirely different mechanism. Before entering upon the subject Young undertakes to eliminate the various other causes which might be invoked in elucidation of the problem. To prove that the cornea bears no part in accommodation, he neutralizes its refracting power by immersing it in water and substituting in its place a lens, and observes that there is no change in the range of his accommodation. One cannot but be struck with admiration for the patience and ingenuity which such an operation supposes. The decisive argument in favor of a change of form in the crystalline is derived by Young from a fact which Wollaston and Helmholtz sought in vain to verify, but which is verifiable on the eyes of youth, *i. e.*, the correction of the aberration during accommodation. His determination of the nature of crystalline alteration was due to another fact which has just recently been verified—that the capacity of accommodation is half as much again greater at the center of the crystalline than at its periphery; from which he concluded a flattening of the surfaces at the periphery.

It will be seen by this brief review to what an extent the ideas of Young on ophthalmology are still fresh and of absorbing interest; more than any other he has prepared the way for the final solution of these problems.

CHARLES HENRY.

PARIS.

SOCIETIES AND ACADEMIES.

THE ENTOMOLOGICAL SOCIETY OF WASHINGTON.

THE 110th regular meeting was held October 10, 1895.

Mr. Hubbard read a paper entitled 'Additional Notes upon the Insect Guests of the Florida Land Tortoise,' in which he gave his observations of the past summer, including a number of facts supplemental to his article on this subject published in *Insect Life*, Vol. VI., No. 4. The list of regular inhabitants of the burrows of the Florida land tortoise now reaches 19 species, of which 18 are insects and one is a vertebrate (*Rana esopus*). Aside from these, 5 insects are constant visitors to the burrows. The paper was briefly discussed by Messrs. Schwarz and Gill. Mr. Schwarz referred to the possible finding of a similar insect fauna in the burrows of the European Testudos and of the two other American species of Gopherus. Dr. Gill showed that the European species do not make burrows, and argued that in spite of the close resemblance of American forms to the Florida species we must not necessarily assume that they are burrowers. Mr. Schwarz said that the inhabitants at Penas, a station on the Mexican National Railway, near Laredo, informed him that there is a burrowing tortoise in the great sand plains near that place. This he thinks may be *G. berlandieri*.

Mr. O. F. Cook made some general remarks under the head 'Insect Collecting in Africa,' describing some of the rarities which he had found, giving in some detail his impression of the insect fauna of Liberia, and describing his experience with driver ants. These insects, he thinks, may be responsible for the almost total absence of snakes in Liberia, since when snakes are gorged with food they are motionless and defenseless and are easy prey for these active and voracious ants. Mr. Schwarz remarked that no trace of a more or less permanent nest of Eciton has ever been found, and the queen is not known. These ants make temporary nests and are in the main peripatetic. The fact that we do not know the queen, however, argues that a true nest will some day be found. He called attention to the fact that the Rev. P. Jerome Schmidt has found a species of Eciton in North Carolina.

Mr. Ashmead read a paper entitled 'Rhopalosomidae, a New Family of Fossorial Wasps.' Mr. Ashmead founds this new family upon *Rhopalosoma poeyi*, a Cuban species described by Cresson, specimens of which have recently turned up in different parts of the United States. Much discussion exists in the literature as to the proper systematic position of this insect, Westwood, Frederick Smith, Cresson, Haliday and Nylander having assigned it variously to the Ichneumonidae, Braconidae, Poneridae, Sphegidae and Vespidae. Mr. Ashmead's studies led him to place the species as the type of a new family of fossorial wasps, which will form a link between the Vespidae and Sapygidae. Discussed by Messrs. Marlatt, Schwarz, Gill and Uhler, mainly in regard to the fact that the insect seems to lack a fossorial facies.

L. O. HOWARD,
Secretary.

NEW YORK ACADEMY OF SCIENCES.

THE Academy met on October 14 with Professor R. S. Woodward, chairman of the Section of Astronomy and Physics, in the chair. 22 persons were present. The secretary presented verbally the minutes of the preceding meeting.

There being no business, the Section of Astronomy and Physics immediately organized, and listened to the first paper of the evening by Professor Harold Jacoby, entitled 'The Reduction of Astro Photographic Plates.' This paper was read by title, and was explained as being a discussion of the best formulæ for the reduction of the photographic plates taken by the International Committee for the Photographic Mapping of the heavens. It will be published as a bulletin of the Committee at Paris. Professor Jacoby then showed some lantern views of apparatus and astrophotographic plates taken at the observatory at the Cape of Good Hope.

The second paper was read by R. S. Woodward: 'Results of Experiments on Metallic Spheres Falling in Water.' Professor Woodward, after detailing various attempts to obtain data upon the law governing the motion of spheres in a liquid, reported the results of a preliminary series of experiments, made at Co-

lumbia College last June. The experiments were performed by dropping spheres of steel, silver, aluminum and platinum in a tube of water sixteen feet long and one foot in diameter. The spheres vary in diameter from one-half inch to two inches. The interesting results of these preliminary tests are that all the spheres acquired a constant velocity inside of the first meter. Newton's law that resistance to motion is proportional to the square of the velocity seemed to be verified. The times of falling were determined with a Hipp chronoscope. More elaborate experiments with the same apparatus will be made later. This paper was discussed by Professor Jacoby and others. W. Hallock reported upon some summer work, explaining the action of the vocal cords in voice production, and described the photographs taken of the cords while in action, illustrative of their operation.

The Academy then adjourned.

WM. HALLOCK,
Secretary of Section.

NEW BOOKS.

An Introduction to General Biology. WILLIAM T. SEDGWICK and EDMUND B. WILSON. 2d Edition. New York, Henry Holt & Co. 1895. Pp. xii+231.

Darwin and After Darwin. II. Post-Darwinian Questions Heredity and Utility. GEORGE JOHN ROMANES. Chicago, Open Court Publishing Co. 1895. Pp. x+344. \$1.50.

Weather and Disease. A Curve History of their Variations in Recent Years. ALEX. B. MACDOWALL. London, The Graphotone Co. 1895. Pp. 82.

Chemical Experiments, Prepared to Accompany Remsen's 'Introduction to the Study of Chemistry.' IRA REMSEN and WYATT W. RANDALL. New York, Henry Holt & Co. 1895. Pp. x+156.

An Atlas of the Fertilization and Karyokinesis of the Ovum. EDMUND B. WILSON and EDWARD LEAMING. New York, Columbia University Press, Macmillan & Co. 1895. 4to. Pp. vi+32. \$4.00.